



(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 153(4) EPC

(43) Date of publication:
13.06.2012 Bulletin 2012/24

(51) Int Cl.:
E01F 9/011 (2006.01)

(21) Application number: **10806587.1**

(86) International application number:
PCT/KR2010/002393

(22) Date of filing: **16.04.2010**

(87) International publication number:
WO 2011/016612 (10.02.2011 Gazette 2011/06)

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR

(72) Inventors:
• **SHIN, Weon-Hyun**
Paju-si
Gyeonggi-do 413-732 (KR)
• **HWANG, Young-Soon**
Paju-si
Gyeonggi-do 413-833 (KR)

(30) Priority: **07.08.2009 KR 20090072744**
16.04.2010 KR 20100035278

(71) Applicant: **Shindo Industry Co., Ltd**
Gyeonggi-do 413-833 (KR)

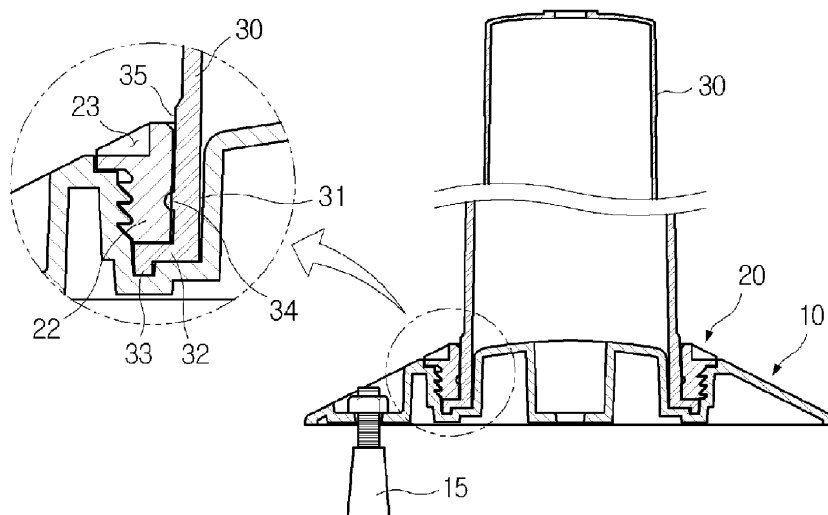
(74) Representative: **Isarpatent**
Patent- und Rechtsanwälte
Postfach 44 01 51
80750 München (DE)

(54) **SEPARABLE LANE-CONTROL BOLLARD ASSEMBLY**

(57) Disclosed is a separable lane-control bollard assembly in which a pole is doubly coupled securely to a support. The separable lane-control bollard assembly includes a pole having an open bottom end; a support base having an insertion part fitted into an opening of the pole

and formed with a ring-shape insertion recess along a lateral side of the insertion part; and a ring-shape coupling member press-fitted into the insertion recess to press the pole toward the insertion part when the insertion part has been fitted into the opening of the pole.

Fig.1



Description

[Technical Field]

[0001] The present invention relates to a lane-control bollard assembly. More particularly, the present invention relates to a separable lane-control bollard assembly.

[Background Art]

[0002] Lane-control bollards are installed in places where traffic accidents are anticipated and drivers must carefully drive a vehicle. In cooperation with road markers, the lane-control bollard induces the eyes of drivers to notify the drivers of the danger zone and to spatially regulate the bidirectional traffic flow.

[0003] In general, the lane-control bollard includes a pole having a cylindrical body and provided at an upper portion thereof with a reflector to improve the visibility and at a lower portion thereof with a taper part to lower the center of gravity, and an anchor bolt to fixedly install the taper part provided at the lower portion of the pole onto the ground.

[0004] According to the conventional lane-control bollard having the above structure, a fringe of the circular taper part provided at the lower portion of the pole is divided into three sections at an angle of 120°, and anchor bolts are fastened to the ground through the three sections to fixedly install the lane-control bollard onto the ground.

[0005] However, when it is necessary to exchange the lane-control bollard due to the breakage or aging, the anchor bolts must be released from the three sections of the taper part, so working steps are relatively increased.

[0006] As a conventional technology for a separable lane-control bollard, Korean Utility Model Registration No. 20-0249096 (Issue date: October 17, 2001) discloses "a flexible bar for dividing a median line", in which an upper rod is fabricated separately from a support plate telescopically fitted into a lower portion of the upper rod, an elastic wire is disposed between the upper rod and the support plate to provide elastic force, a damping space is formed between a bottom surface of a locking part of a lower rod protruding upward from the support plate and a top surface of a locking bar of the upper rod, an auxiliary elastic device is inserted into the damping space to prevent the flexible bar from being folded as external impact is applied thereto, the upper rod is prevented from being separated from the lower rod by the locking bar of the upper rod and the locking part of the lower rod, and the flexible bar is smoothly bent and then rapidly returns to its initial position as external impact is applied thereto due to the elastic wire extending in the longitudinal direction.

[0007] However, the conventional separable lane-control bollard represents the problems in that the assembling work is complicated and the coupling strength of the separable lane-control bollard is weak because the

upper rod is coupled with the support plate by the spring and the elastic wire.

[Disclosure]

[Technical Problem]

[0008] The present invention has been made to solve the above problems occurring in the prior art, and an object of the present invention is to provide a separable lane-control bollard capable of improving the coupling strength between a pole and a support base by doubly coupling the pole securely to the support base.

[Technical Solution]

[0009] In order to accomplish the above object, the present invention provides a separable lane-control bollard assembly including a pole having an open bottom end; a support base having an insertion part fitted into an opening of the pole and formed with a ring-shape insertion recess along a lateral side of the insertion part; and a ring-shape coupling member press-fitted into the insertion recess to press the pole toward the insertion part when the insertion part has been fitted into the opening of the pole.

[0010] Preferably, the separable lane-control bollard assembly further includes a flange horizontally extending along a fringe of the opening of the pole, a tip vertically extending along an end of the flange, and a slot formed at a bottom surface of the insertion recess to receive the tip.

[0011] Preferably, the coupling member is provided at an outer surface thereof with a thread, and the insertion recess is provided at an inner wall thereof corresponding to the outer surface of the coupling member with a thread, so that the coupling member is thread-coupled into the insertion recess.

[0012] Preferably, the coupling member is provided at an upper portion thereof with a gripping part to facilitate gripping of the coupling member.

[0013] Preferably, a round part is formed at an upper fringe of an inner wall of the coupling member.

[0014] Preferably, a lower portion of the pole is thicker than other parts of the pole, a recess is formed along an outer surface of the lower portion of the pole, and a protuberance is provided at the recess along the outer surface of the lower portion of the pole such that the protuberance protrudes more than other parts.

[Advantageous Effect]

[0015] According to the present invention, the pole is doubly coupled securely to the support base, so the coupling strength between the pole and the support base can be improved.

[0016] In addition, when the pole is broken, the pole can be rapidly exchanged with new one without separat-

ing the support base from the pole.

[Description of Drawings]

[0017]

FIG. 1 is a sectional view showing a separable lane-control bollard assembly according to one embodiment of the present invention;
 FIG. 2 is an exploded sectional view showing a support base and a socket bolt illustrated in FIG. 1;
 FIG. 3 is an exploded perspective view for explaining an installation method of a separable lane-control bollard assembly according to the present invention; and
 FIG. 4 is a view showing a separable lane-control bollard assembly according to another embodiment of the present invention.

[Best Mode]

[Mode for Invention]

[0018] Hereinafter, exemplary embodiments of the present invention will be described in detail with reference to accompanying drawings. The above object, operation and effect of the present invention and other objects, technical features and advantages of the present invention will be apparently comprehended by those skilled in the art when making reference to embodiments in the following description and accompanying drawings.

[0019] However, the present invention is not limited to the following embodiments, but various modifications may be realized. The embodiments are provided to make the disclosure of the present invention perfect and to make those skilled in the art perfectly comprehend the scope of the present invention. Various changes, modifications, additions and equivalents may be possible within the scope of claims.

[0020] FIG. 1 is a sectional view showing a separable lane-control bollard assembly according to one embodiment of the present invention and FIG. 2 is an exploded sectional view showing a support base and a socket bolt illustrated in FIG. 1.

[0021] As shown in FIGS. 1 and 2, the separable lane-control bollard assembly according to one embodiment of the present invention includes a pole 30 having an open bottom end, a support base 10 having an insertion part 11a fitted into an opening 31 of the pole 30 and formed with a ring-shape insertion recess 12 along a lateral side of the insertion part 11a, and a ring-shape coupling member 20 press-fitted into the insertion recess 12 to press the pole 30 toward the insertion part 11a when the insertion part 11a has been fitted into the opening 31 of the pole 30.

[0022] The pole 30 is a cylindrical body having an open bottom end and made from high elastic soft polyurethane. In addition, a reflector (not shown) fixed to an upper end

of the pole 30 includes a film-type reflective sheet coated with a high-brightness light reflective material or a reflective pigment to reflect light irradiated from a headlight of a vehicle.

5 [0023] Referring to FIG. 1, a lower portion of the pole 30 has a thickness thicker than a thickness of other parts of the pole 30. A recess 35 is formed along an outer surface of the lower portion of the pole 30, and a protuberance 34 is provided at the recess 35 along the outer surface of the lower portion of the pole 30 such that the protuberance 34 protrudes more than other parts.

10 [0024] Preferably, a flange 32 horizontally extends along a fringe of the opening 31 of the pole 30, and a tip 33 vertically extends along an end of the flange 32.

15 [0025] The support base 10 includes a body 11 made from ABS having impact resistance or nylon.

[0026] For instance, the body 11 may have a hemispherical shape and may include the insertion part 11a and a fixing part 11b, in which the insertion part 11a is provided at an inner portion of the body 11 and the fixing part 11b is provided at an outer portion of the body 11 on the basis of the ring-shape insertion recess 12. As will be described later, the insertion part 11a is fitted into the opening 31 of the pole 30, and the fixing part 11b is fixed to an object, such as the ground, by an anchor bolt 15.

20 [0027] Preferably, a slot 13 is formed on the bottom surface of the insertion recess 12.

[0028] In addition, a thread 18 is formed at an inner wall of the insertion recess 12 so that the socket bolt 20 is thread-coupled into the insertion recess 12.

25 [0029] Preferably, a locking step 16 may be formed along a fringe of an inlet of the insertion recess 12 to restrict the insertion of the socket bolt 20.

[0030] The socket bolt 20 serves as the coupling member which presses the pole 30 against the insertion part 11a in a state that the insertion part 11a of the support base 10 has been fitted into the opening 31 of the pole 30.

30 [0031] The socket bolt 20 is made from ABS having impact resistance or nylon. The socket bolt 20 includes a body 22 having a ring shape and formed therein with a through hole 24. The socket bolt 20 is fitted into the pole 30.

[0032] Referring to FIG. 2, a thread 28 is formed on an outer surface of the body 22. As described above, the thread 28 is coupled with the thread 18 formed in the insertion recess 12 of the support base 10. In addition, a locking protrusion 26 protrudes along an outer surface of an upper portion of the body 22. The locking protrusion 26 is rested on the locking step 16 of the insertion recess 12.

35 [0033] Preferably, a round part 22a is formed at an upper fringe of an inner wall of the body 22. When a vehicle runs over the pole 30, the pole 30 may be bent, but the pole 30 can be prevented from being torn or broken due to the round part 22a.

40 [0034] Preferably, a gripping part 23 may be provided at the upper portion of the body to allow a worker to grip the gripping part 23 using a hand when the socket bolt 20

is thread-coupled into the insertion recess 12.

[0035] Hereinafter, the installation work and the operation of the separable lane-control bollard assembly having the above structure according to the embodiment of the present invention will be described.

[0036] FIG. 3 is an exploded perspective view for explaining an installation method of the separable lane-control bollard assembly according to the present invention.

[0037] First, the support base 10 is placed in the installation position and the anchor bolt 12 is inserted into the through hole 14 formed in the fixing part 11b of the support base 10, thereby fixing the support base 10 onto the ground.

[0038] After the support base 10 has been fixed onto the ground, the pole 30 is coupled with the support base 10 from the top of the support base 10. In detail, the pole 30 is pressed downward in such a manner that the insertion part 11a of the support base 10 can be inserted into the opening 31 of the pole 30. At this time, the insertion part 11a of the support base 10 is press-fitted into the opening 31 of the pole 30, so the pole 30 is primarily supported.

[0039] In particular, since the tip 33 of the pole 30 is press-fitted into the slot 13 formed on the bottom surface of the insertion recess 12, the pole 30 can be securely fixed to the support base 10.

[0040] Then, while the pole 30 is being inserted into the through hole 24 of the socket bolt 20 from the top of the socket bolt 20, the socket bolt 20 is thread-coupled with the thread 18 of the insertion recess 12 by rotating the socket bolt 20 from the inlet of the insertion recess 12 of the support base 10. For the purpose of convenience of illustration, the socket bolt 20 is positioned at the lower portion of the pole 30 in FIG. 3.

[0041] As described above, since the recess 35 is formed at the lower portion of the pole 30, friction between the sidewall of the through hole 24 of the socket bolt 20 and the outer wall of the pole 30 may be reduced due to the gap defined by the recess 35, so that the thread-coupling work may be facilitated. Meanwhile, pressure is concentrated onto the protuberance 34 provided at the recess 3 by the socket bolt 20, so that the pole 30 can be more securely fixed.

[0042] While the socket bolt 20 is being thread-coupled into the insertion recess 12, the locking protrusion of the socket bolt 20 is rested on the locking step 16 provided at the inlet of the insertion recess 12, so that the socket bolt 20 may not rotate further.

[0043] In this manner, the socket bolt 20 simultaneously presses the outer surface of the pole 30 and the flange 22, so that the pole 30 can be secondarily supported. In particular, since the flange 22 is pressed by the socket bolt 20, the tip 33 of the pole 30 can be securely inserted into the slot 13 of the support base 10, so that the coupling strength can be more reinforced.

[0044] The socket bolt 20 can be coupled with the support base 10 by manually rotating the gripping part 23 provided in the body 22. Preferably, in order to more securely

fasten the socket bolt 20, an additional structure suitable for a wrench 110 or a driver can be provided in the socket bolt 20. For instance, if step parts 29 are formed in the body 22 of the socket bolt 20 in opposition to each other, the worker can more securely fasten the socket bolt 20 by rotating the socket bolt 20 using the wrench 110. In addition, support blocks 27 formed at front surfaces thereof with support holes 27a can be formed in the body 22 of the socket bolt 20 in opposition to each other. In this case, the worker can more securely fasten the socket bolt 20 by rotating the socket bolt 20 using the driver after inserting the driver into the support hole 27a.

[0045] The above structures for securely fastening the socket bolt 20 are illustrative purposes only, and various structures can be adopted to securely fasten the socket bolt 20.

[0046] FIG. 4 is a view showing a separable lane-control bollard assembly according to another embodiment of the present invention.

[0047] As shown in FIG. 4, according to another embodiment of the present invention, a support base 100 is prepared in the form of a block having a plurality of holes 102 and anchor bolts 15 are inserted into the holes 102 to fix the support base 100 onto the ground.

[0048] In the separable lane-control bollard assembly according to another embodiment of the present invention, the support base 100 can be used as a lane-control control.

[0049] Although exemplary embodiments of the present invention have been described, the present invention is not limited to the above embodiments.

[0050] For instance, a ring-shape coupling member having no thread can be employed instead of the socket bolt. In this case, the coupling member is press-fitted into the insertion recess to fix the pole to the support base. In addition, the pole can be thread-coupled with the insertion part of the support base. In this case, the pole may not be separated from the support base even if the coupling member is separated due to the external impact.

[0051] Further, the cylindrical pole may be modified into an angular pole, a plate pole, or a column pole. In this case, an opening must be formed at least in the lower end of the pole.

[0052] The right of the present invention may not be limited to the above embodiments, and the present invention is defined only within the scope of claims.

Claims

1. A separable lane-control bollard assembly comprising:

a pole having an open bottom end;
a support base having an insertion part fitted into an opening of the pole and formed with a ring-shape insertion recess along a lateral side of the insertion part; and

a ring-shape coupling member press-fitted into the insertion recess to press the pole toward the insertion part when the insertion part has been fitted into the opening of the pole.

5

2. The separable lane-control bollard assembly of claim 1, further comprising a flange horizontally extending along a fringe of the opening of the pole, a tip vertically extending along an end of the flange, and a slot formed at a bottom surface of the insertion recess to receive the tip. 10

3. The separable lane-control bollard assembly of claim 1 or 2, wherein the coupling member is provided at an outer surface thereof with a thread, and the insertion recess is provided at an inner wall thereof corresponding to the outer surface of the coupling member with a thread, so that the coupling member is thread-coupled into the insertion recess. 15

4. The separable lane-control bollard assembly of claim 1, wherein the coupling member is provided at an upper portion thereof with a gripping part to facilitate gripping of the coupling member. 20

5. The separable lane-control bollard assembly of claim 4, wherein the gripping part includes stepped parts provided in opposition to each other or support blocks protruding in opposition to each other and formed at front surfaces thereof with support holes. 25 30

6. The separable lane-control bollard assembly of claim 1 or 2, wherein a round part is formed at an upper fringe of an inner wall of the coupling member. 35

7. The separable lane-control bollard assembly of claim 1, wherein a lower portion of the pole is thicker than other parts of the pole, a recess is formed along an outer surface of the lower portion of the pole, and a protuberance is provided at the recess along the outer surface of the lower portion of the pole such that the protuberance protrudes more than other parts. 40

45

50

55

Fig.1

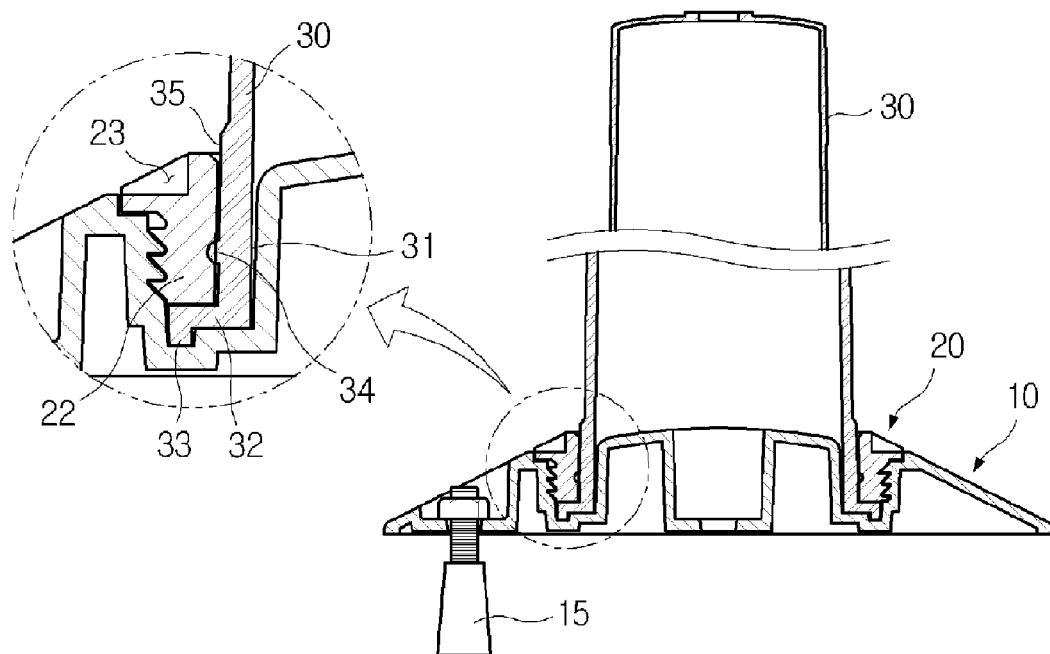


Fig.2

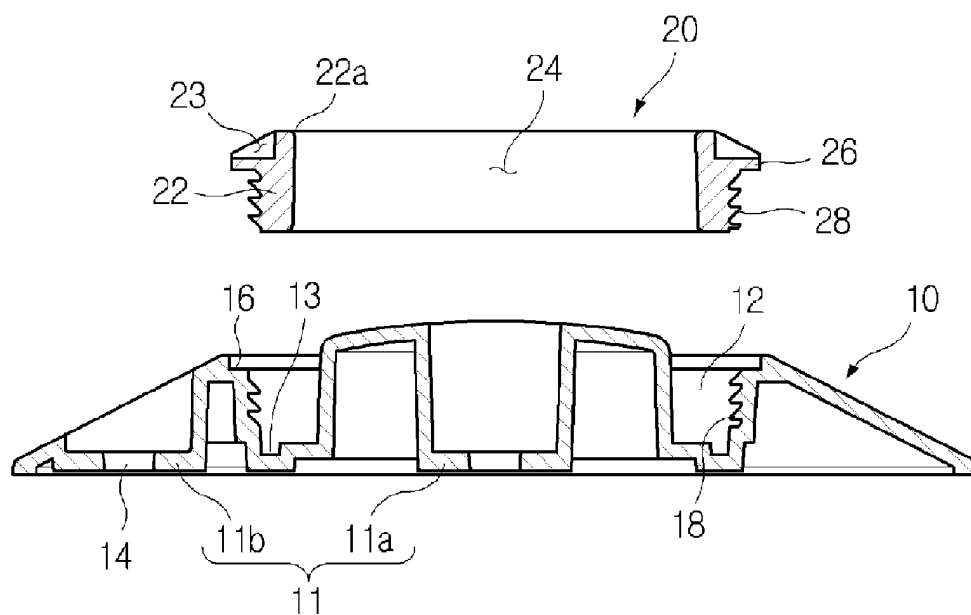


Fig.3

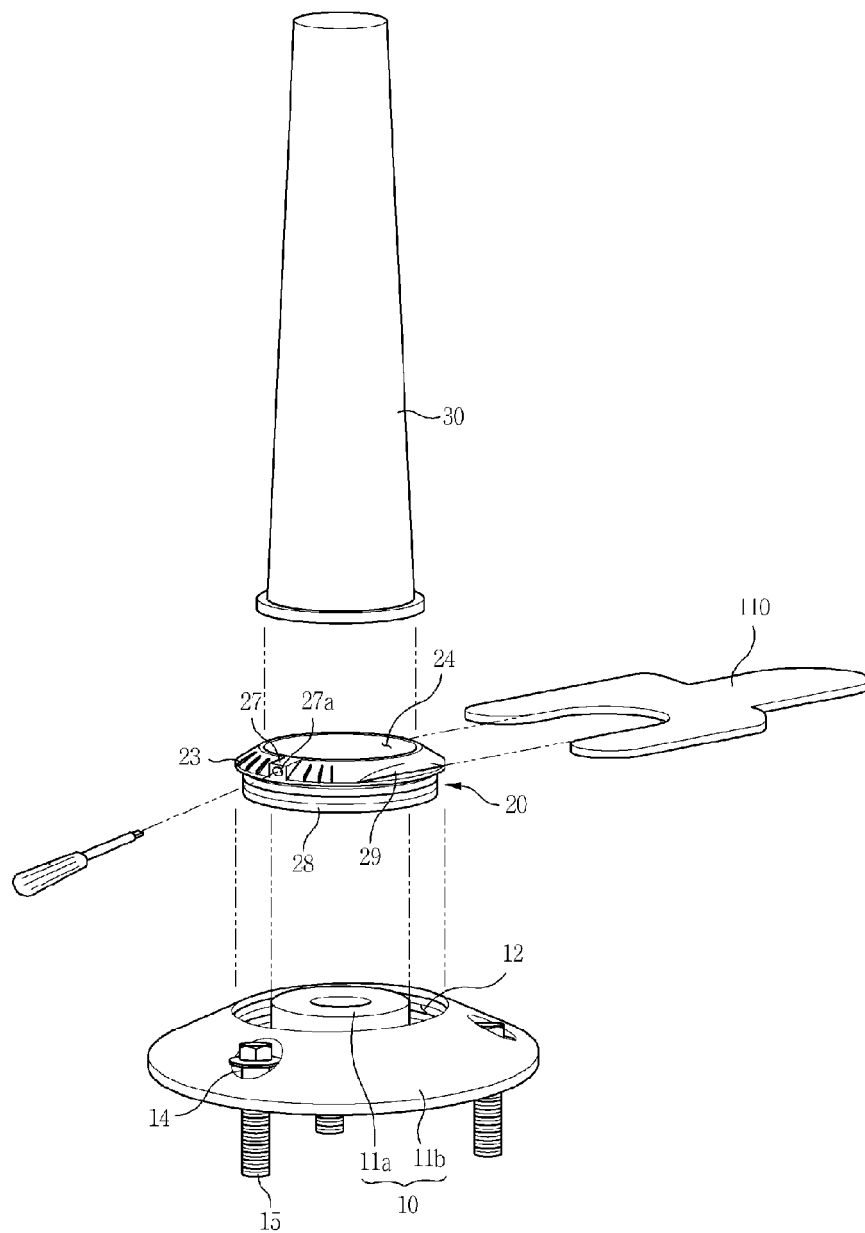
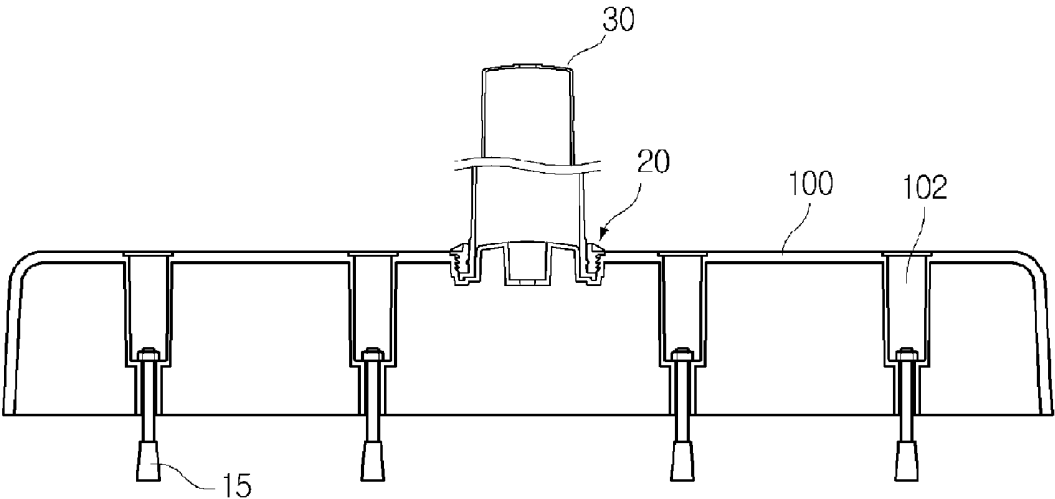


Fig.4



REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- KR 200249096 [0006]